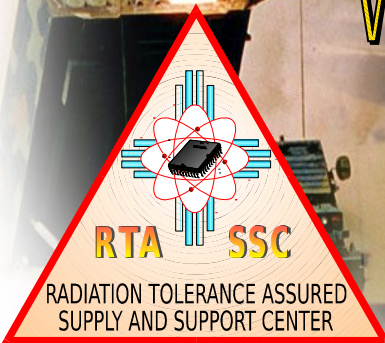




RADIATION TOLERANCE ASSURED SUPPLY and SUPPORT CENTER Long-Term Storage White Sands Missile Range, New Mexico



SVAD



**Presented by
Roger E. Sloan**

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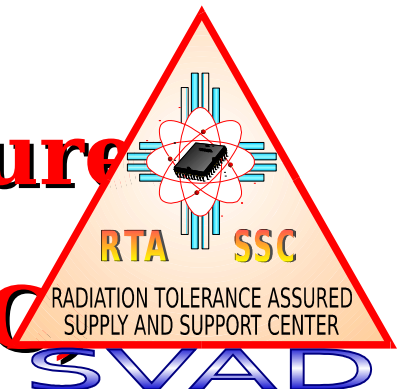
- **White Sands Missile Range
(WSMR)**

- **Systems Test and Assessment
Directorate
(ST)**

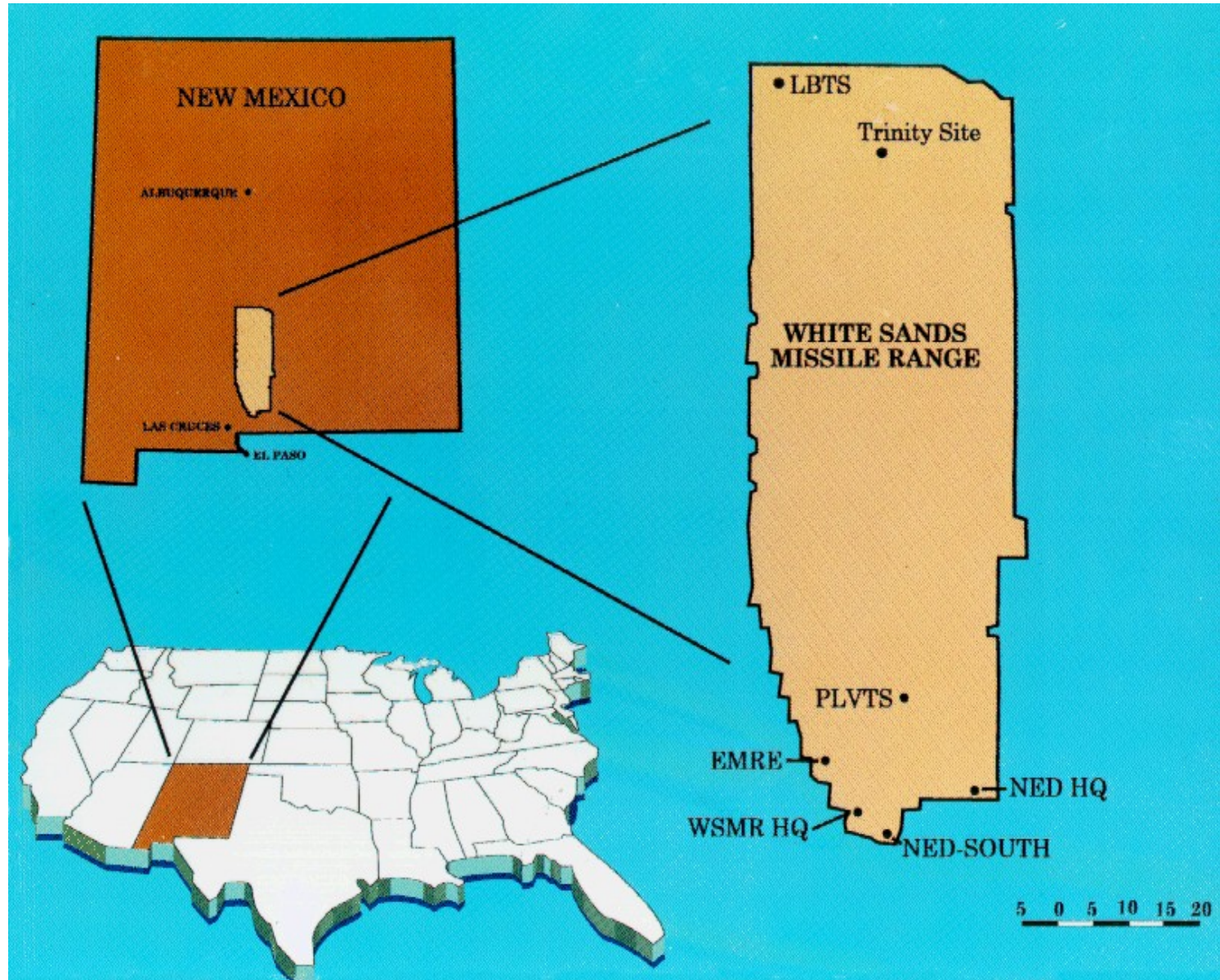
- **Survivability, Vulnerability
Assessment
Division (SVA)**



**Radiation Tolerance Assurance
Supply and
Support Center (RTASSC)**

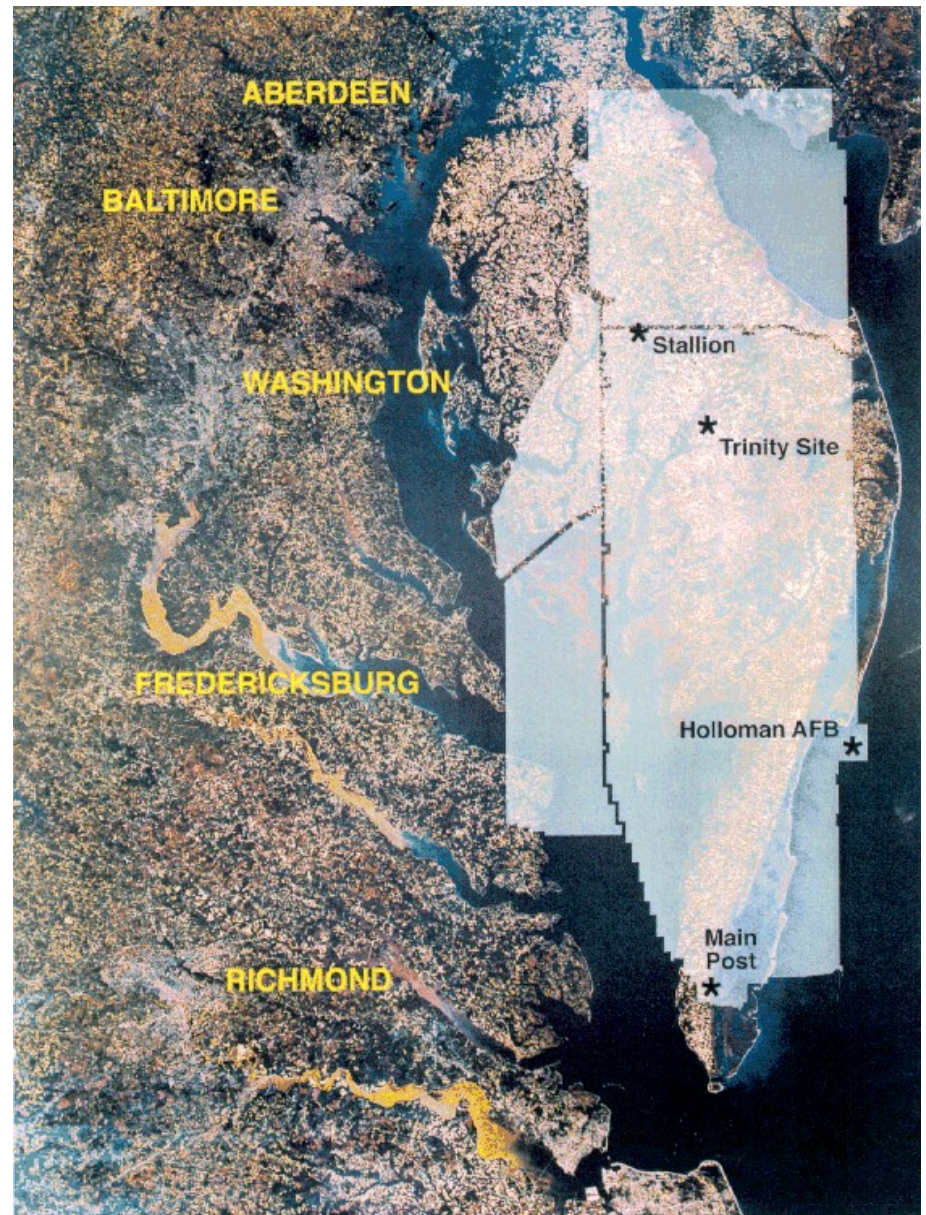


White Sands Missile Range

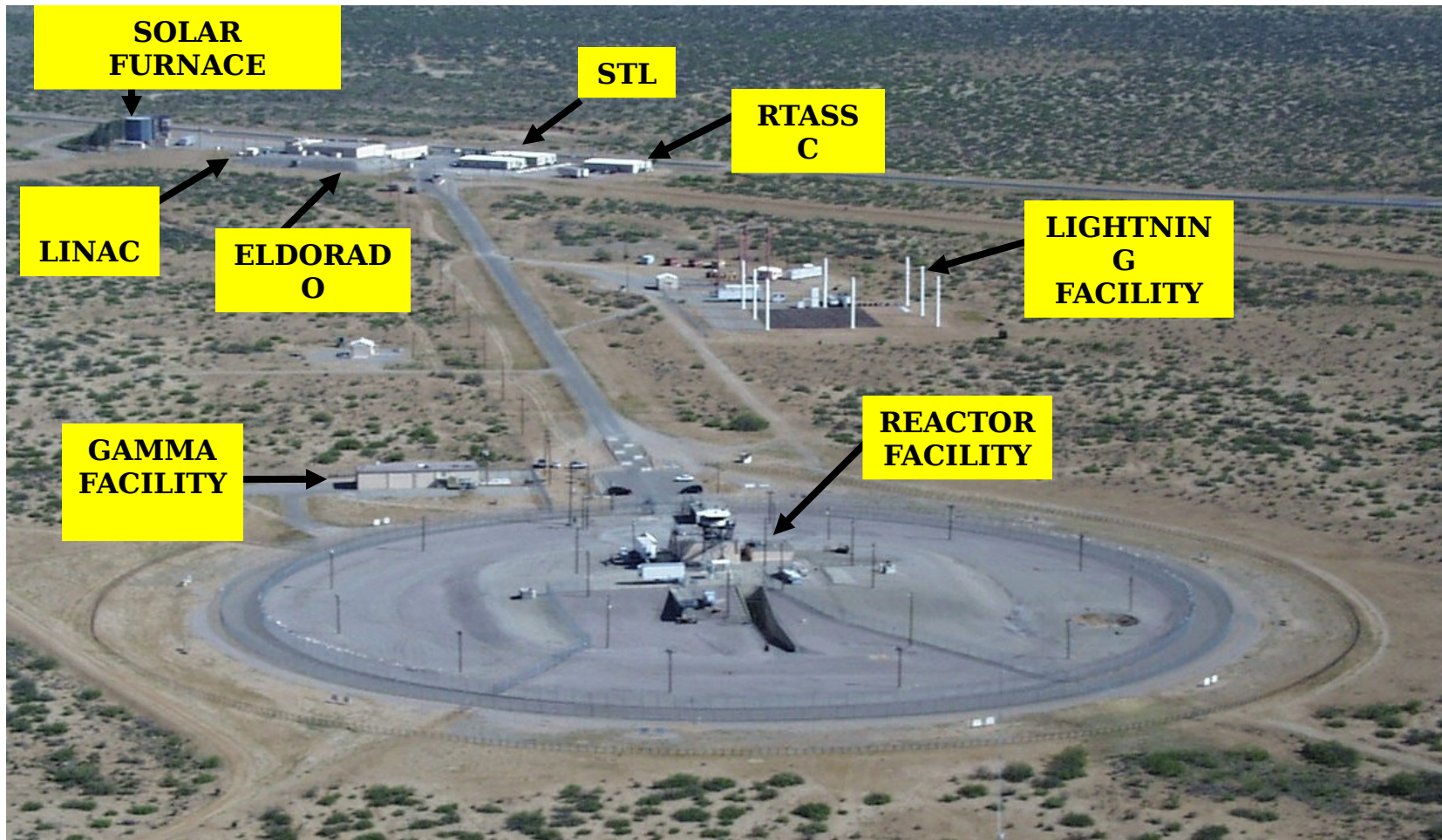


WSMR Size

WSMR occupies
about
2,000,000 acres –
the
size of Delaware
and
Rhode Island
combined.



CO-LOCATION OF NEW FACILITIES



What Is The RTASSC?

The RTASSC is an ISO 9002 certified, service oriented, supply and support center dedicated to assist military and space system program offices with DMSMS proactive and reactive management and solutions, and radiation tolerance (RT) “cradle-to-grave” management. Included are: electrical parametric device characterization, specification development, engineering solutions, RT testing, circuit analysis and design margin determination, RT certification, procurement, third-part manufacturing, certified long- term storage, manufacturing process monitoring and tracking for RT management, and delivery of hard-to-find radiation tolerance assured semiconductors, microcircuits, circuit card assemblies and line replaceable units.

Mission

- **To provide military and space programs a means of procuring highly reliable (commercial, industrial and military grade) RTA certified microelectronics not guaranteed by the device manufacturer to be radiation survivable.**
- **To ensure the availability of these products, by establishing partnerships with the device manufacturers, third-party manufacturers, distributors and other government agencies.**

Mission

- To provide the following capabilities:
 - Identify potential DMSMS problems by monitoring, tracking and performing analysis of manufacturing design, process changes and new products.
 - DMSMS solutions and management
 - On-time procurements (life-of-program buys and/or multi-year buys)
 - Third-party manufacturing
 - **State-of-the-art fenced** long-term storage (wafer/die and/or finished product)
 - Receiving, inspection and shipping of stored product
 - Certify RT compliance
 - Provide RT Solutions and Life-Cycle RTA management
- Provide these services to all military branches, other government agencies and private industry.

Receiving



- The receiving area is fully electrostatic discharge (ESD) protected and monitored weekly.
- All new product are logged into the RTASSC database.
- After login, product is inspected for damage and/or defects (500X capability).
- All damaged and/or defective product are photographed and a report is forwarded to the customer for disposition.

Preservation and Packing



- Product received from other than the original equipment manufacturer is washed to remove any contaminants.
- All product is dried at 125°F for 2 hours.
- After drying, product is placed into ESD foam or carrier.
- Product is then placed into ESD/moisture-barrier bags.
- Package is labeled with manufacturer's PIN and system PIN (if required).

Enemies of electronic components during long-term storage

- **Moisture (Humidity)**
- **Electrostatic fields**
- **Ultra-Violet light**
- **Large variations in temperature**
- **Air-Borne contaminants**
- **Dust**

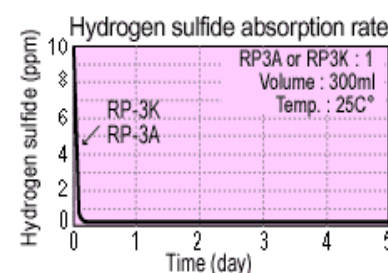
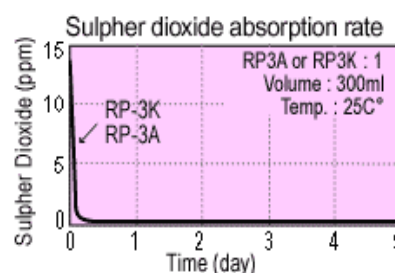
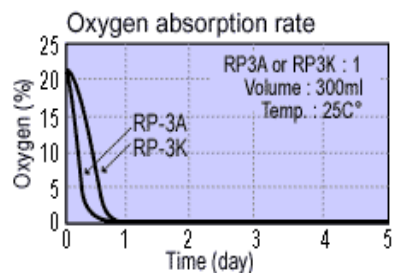
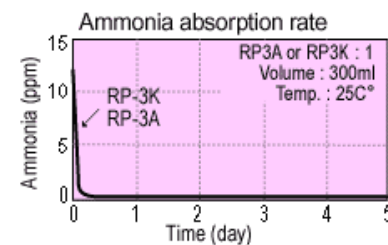
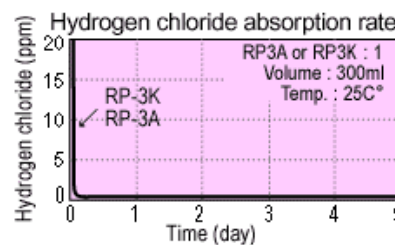
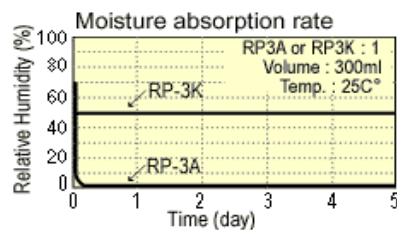


All product is packaged in Moisture-Barrier Bags that meet the requirements of MIL-B-81705C Type 1. The moisture barrier bag also provides full protection from ESD, static fields and tribocharging.

● **Features:**

- **Strong, light weight, suitable for vacuum packaging and nitrogen flushing.**
- **Meets the electrical and physical requirements of EIA 583, EIA 541, EIA 625 and MIL-B-81705C, Type 1.**
- **Static safe: dissipative inner and outer surfaces.**
- **Passes out-gassing and corrosion tests.**
- **Used for packaging Standard Microcircuit Drawing's (SMD's) parts in trays, shipping tubes and tape & reel.**
- **Printed with ESD and moisture warning symbols.**
- **Date and lot coded for Quality Control (QC) traceability.**
- **Heat sealable.**

- A special desiccant is used with all product packaged by the RTASSO desiccant removes, from a sealed gas barrier container, sources of corrosion deterioration of metal products caused by oxidation, sulfurization or other processes. These irreversible chemical reactions occur simultaneously with the gases cannot be re-released once absorbed by the desiccant. As shown in the graphs below various corrosive gasses are reduced to less than 1 ppm



The RTASSC Storage Facility



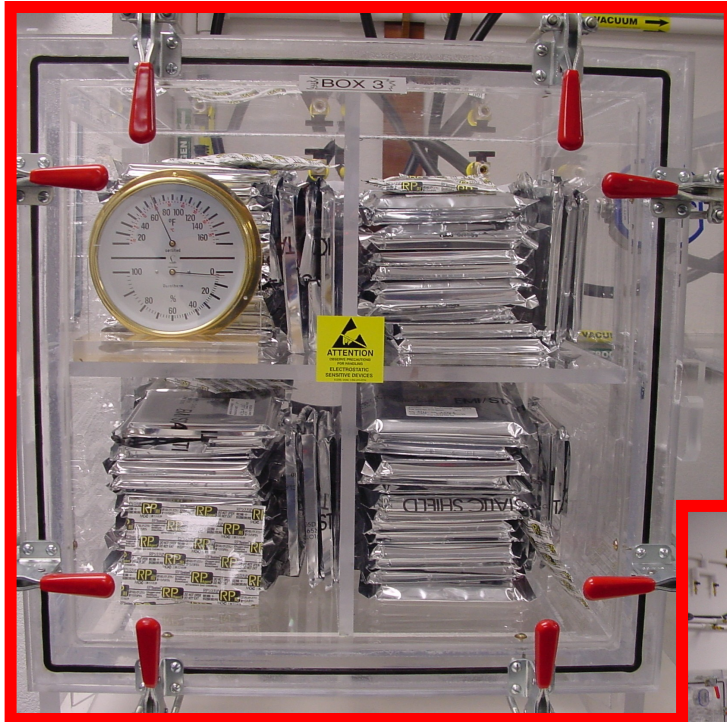
ISO 9002 CERTIFIED * 25 APR 2001

The RTASSC Storage Facility



ISO 9002 CERTIFIED * 25 APR 2001

Nitrogen Storage



- Dry nitrogen is used for wafer/die and customer requested packaged product.

FULL ESD PROTECTION



RTASSC Long-Term Storage Facility

- **Dry Nitrogen Storage**

- Positive pressure containers 0.5-1.0 PSI.
- Nitrogen is 99.999% moisture free.
- Relative humidity less than 10%.
- Complete ESD protection.
- Temperature controlled at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- All stored product are **fenced*** to meet customer needs.
- Protected against air-borne contaminants.
- * **Stored exclusively for specific program's use.**

Long-Term Storage



FULL ESD PROTECTION

- Secured long-term storage for packaged product
- Under ISO 9002 certification
- Under Laboratory Suitability certification

RTASSC Long-Term Storage Facility

- **REMSTAR Storage**

- **Parts are visually inspected for damage and contaminants upon receipt.**
- **All parts are ESD shielded and placed in
moisture-barrier bags.**
- **Storage area:**
 - ◆ **Temperature controlled to $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$.**
 - ◆ **Security controlled.**
 - ◆ **All stored product are **fenced** to meet customer needs.**

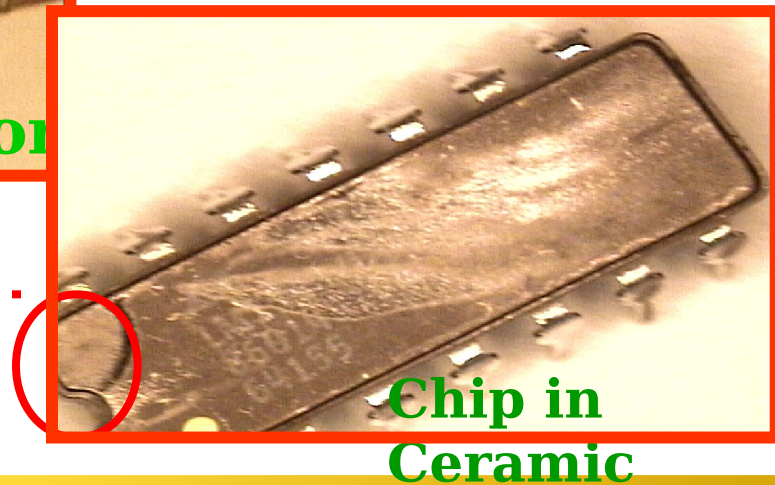
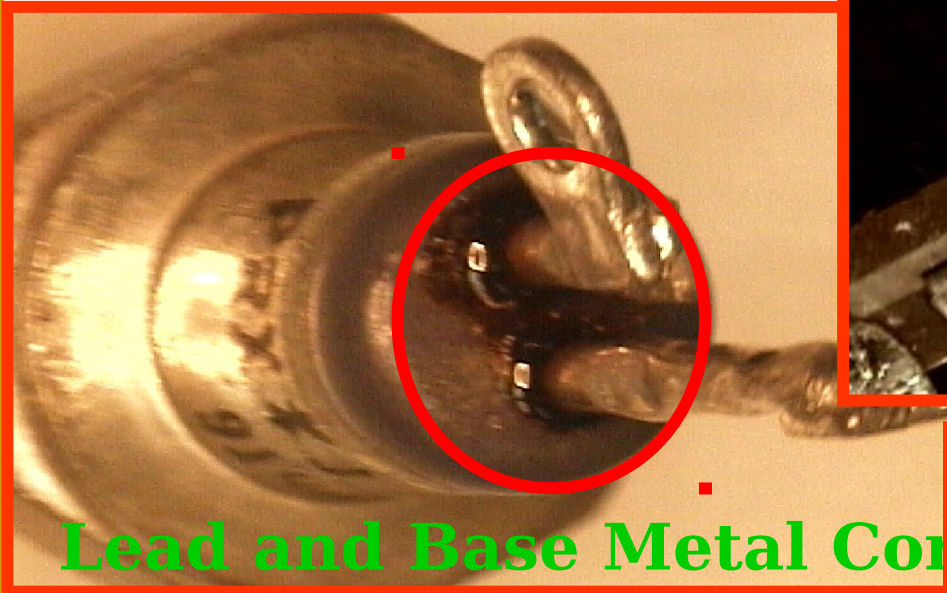
Radiation Tolerance and Long-Term Storage

- **Radiation Tolerance at the die level can be jeopardized due to aging.**
- **By maintaining a stable/benign storage environment, the RT can be prolonged**



**RTASSC Storage
Certifies RT Stability
for 10+ years**

Damage Due To Improper Storage\Packaging Practices



Shipping



- **Prior to shipping, product is removed from storage and inspected for damage and/or corrosion.**
- **Product is packed in accordance with MIL-STD-2073-1C. A RTASSC Certificate of Compliance is provided with each container.**

Storage Cost

**The RTASSC has three methods of costing;
each can be tailored to fit the
customer's requirements.**

Option 1

- **A storage fee of 2% of the average total dollar amount stored for the year, plus a 25% fee of the total dollar amount of each procurement processed which includes, processing the procurement, tracking, receiving inspection, and storage.**

Storage Cost

**The RTASSC has three methods of costing;
each can be tailored to fit the
customer's requirements.**

Option 2

- **Based on the physical size of the program, a flat fee can be charged.**

**Example: 1 man year @ \$75.00/hr X 2,080 hours
= \$156,000.00/yr.**

**Under this option we do not charge a storage fee
we charge a fee for processing procurements.**

Storage Cost

**The RTASSC has three methods of costing;
each can be tailored to fit the
customer's requirements.**

Option 3

- **A Square-Footage fee may be charged for the storage of material. The cost for this option is \$573.00 per square foot of space needed to store the material. This option would also include the 25% procurement processing fee as described in option 1.**

Programs and Offices Currently Using the RTASSC System

- **Abrams Tank**
- **AWACS_ESC_FR_RSIP**
- **AWACS_ESC_USAF_RSIP**
- **B-2 Bomber**
- **Bradley A3 Fighting Vehicle**
- **Defense Supply Center Columbus (*DSCC*)**

Summary

- Long-Term storage requires consistent knowledge/processes, a controlled temperature environment, and controlled procedures for packaging.
- The RTASSC has the capability to fence and store electronic devices and components procured for long-term storage.
- The RTASSC uses the latest technology and methods in packaging components / die for long-term storage.